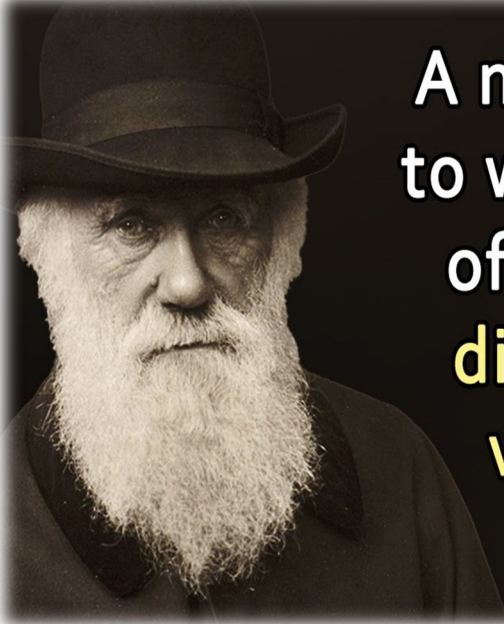


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**A man who dares  
to waste one hour  
of time has not  
discovered the  
value of life.**

**Charles Darwin**



**12 Feb 1809 <::><::><::> 19 Apr 1882**

**Compiled by:  
Prof Dr S Ramalingam  
ISBN:978-81-982847-9-2**

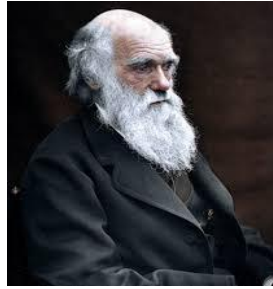
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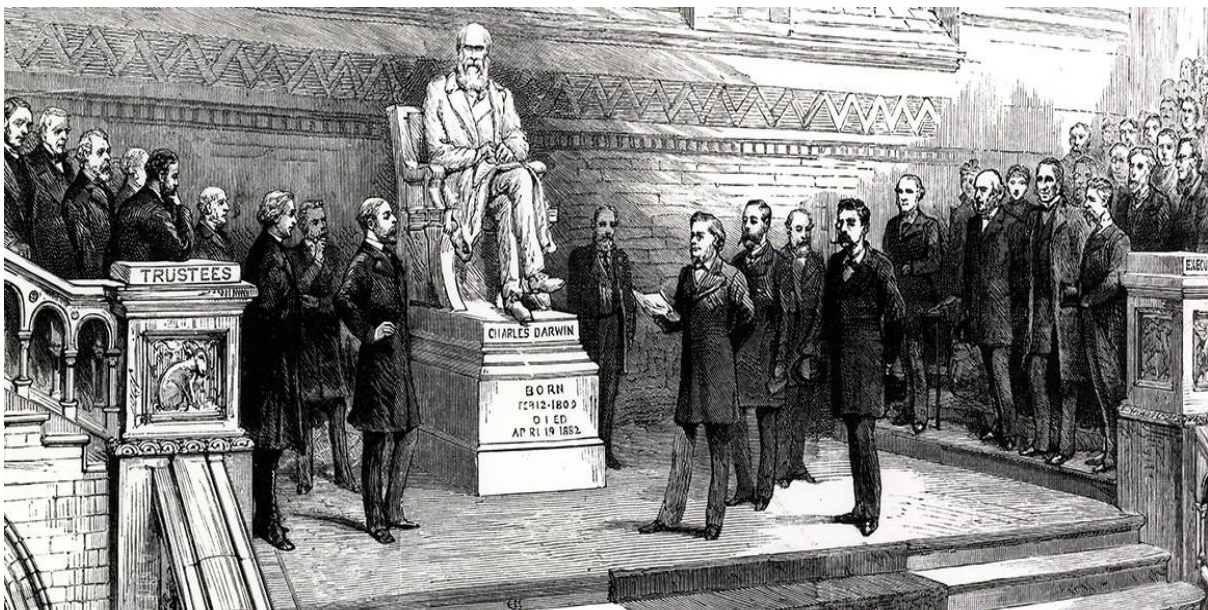
12 Feb 1809



19 Apr 1882

<https://www.nhm.ac.uk/discover/charles-darwin-most-famous-biologist.html>

{Also, visit these Web Links: <https://iep.utm.edu/darwin/> & <https://adb.anu.edu.au/biography/darwin-charles-robert-1957>}



Unveiling a statue of Charles Darwin at the Museum, 1885.

# Charles Darwin

## History's Most Famous Biologist

Charles Robert Darwin (1809-1882) transformed the way we understand the natural world with ideas that, in his day, were nothing short of revolutionary.

He and his fellow pioneers in the field of biology gave us insight into the fantastic diversity of life on Earth and its origins, including our own as a species.

Charles Darwin is celebrated as one of the greatest British scientists who ever lived, but in his time his radical theories brought him into conflict with members of the Church of England.

## Young Charles Darwin

Born in 1809 in Shrewsbury, Shropshire, Darwin was fascinated by the natural world from a young age. Growing up he was an avid reader of nature books and devoted his spare time to exploring the fields and woodlands around his home, collecting plants and insects.

In 1825 Darwin enrolled in medical school at the University of Edinburgh, where he witnessed surgery on a child. Surgeries at the time would have been carried out without the use of anaesthetic or antiseptics, and fatalities were common.

Watching this procedure left Darwin so traumatised that he gave up his studies without completing the course.

During his time in Edinburgh, Darwin also paid for lessons in **taxidermy from John Edmonstone**, a former enslaved man from Guyana. The skills Edmonstone taught Darwin became crucial just a few years further into his career.

After his time in Scotland, Darwin went to Cambridge University to study theology.

## The voyage of HMS Beagle

In no rush to take holy orders, in 1831 Darwin accepted an offer to embark on a five-year voyage aboard HMS Beagle.



**Drawing of H.M.S. Beagle from A Naturalist's Voyage  
Round the World by Charles Darwin.**

He was recommended by one of his Cambridge professors for the role as naturalist and companion to the ship's captain, Robert FitzRoy.



The journey would change both his life and the trajectory of Western scientific thinking.

Darwin explored remote regions and marvelled at a world so different from the one he knew. He encountered birds with bright blue feet, sharks with T-shaped heads and giant tortoises.

On his travels Darwin collected plants, animals and fossils, and took copious field notes. These collections and records provided the evidence he needed to develop his remarkable theory.



The shells in this specimen drawer were collected by Charles Darwin during the voyage of the HMS Beagle.

Darwin returned to England in 1836. A highly methodical scholar, constantly collecting and observing, he spent many years comparing and analysing specimens before finally declaring that evolution occurs by a process of natural selection.

### What is the theory of natural selection?

To this day the theory of **evolution by natural selection** is accepted by the scientific community as the best evidence-based explanation for the diversity and complexity of life on Earth.

The theory proposes that the 'fittest' individual organisms - those with the characteristics best suited to their environment - are more likely to survive and reproduce. They pass on these desirable characteristics to their offspring.

Gradually these features may become more common in a population, so species change over time. **If the changes are great enough, they could produce a new species altogether.**

On his travels Darwin had collected finches from many of the Galápagos Islands - off the coast of Ecuador - which helped him to formulate his idea.



**Cactus finch *Geospiza scandens* from  
Charles Darwin's *Zoology of the Voyage of the H.M.S. Beagle*.**

Some of these finches had stout beaks for eating seeds, others were insect specialists. But Darwin realised that they were all descendants of a single ancestor. As they dispersed to different islands, the birds had adapted to eat the various foods available. Natural selection had produced 13 different species of finch.

## **Darwin's pigeons**

From his travels on HMS Beagle, Darwin suspected that the environment might naturally manipulate species, causing them to change over time - but he couldn't find a means to explore this effectively in the wild.

Experimenting with artificial selection in pigeons gave him a way to study how far a species could change.

By artificially selecting features - crossing birds with particular characteristics to generate different offspring - he gathered valuable evidence for evolution by natural selection.

To illustrate his theory, Darwin bred the birds to have exaggerated features.



**Original line drawing of an English Pouter pigeon from the book *Variation in Animals and Plants under Domestication* by Charles Darwin.**

The similarity between artificial selection and natural selection is at the heart of his explanation of evolution in his revolutionary book *On the Origin of Species*.

After completing his experiments, he gave all 120 of his pigeon specimens to the Museum. They are currently part of our **bird collections** kept at **Tring**, Hertfordshire.

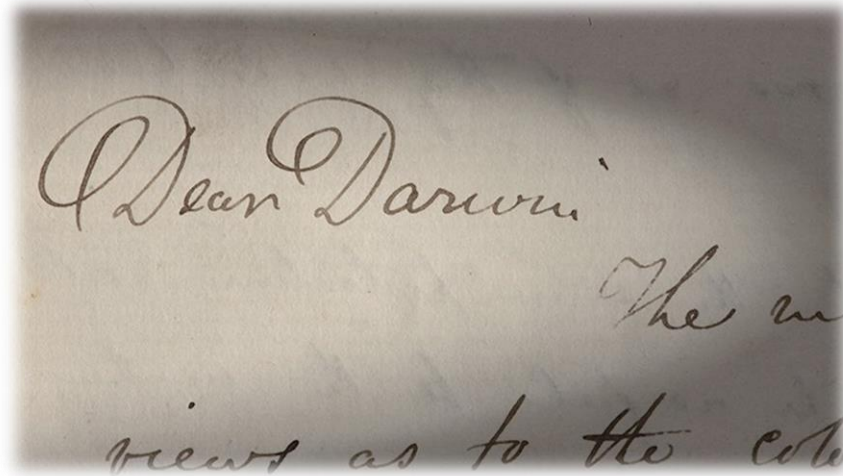


**Fancy breeds of rock dove *Columbia livia* donated to our collections by Charles Darwin in 1867.**

## A shared discovery

Darwin knew his radical ideas would be met with stiff opposition. Even after 20 years of research, he worried about how his theory of evolution would be received as it challenged widely held religious beliefs of the time.

He delayed publishing on the topic for a great number of years while he assembled a mountain of evidence. When he learned that the young naturalist **Alfred Russel Wallace** had developed similar ideas, Darwin volunteered to send Wallace's ideas to a journal for immediate publication.



Letter sent to Charles Darwin by Alfred Russel Wallace.

On advice from friends, the two scientists organised a joint announcement. Their theory of evolution by natural selection was presented at the Linnean Society in London.

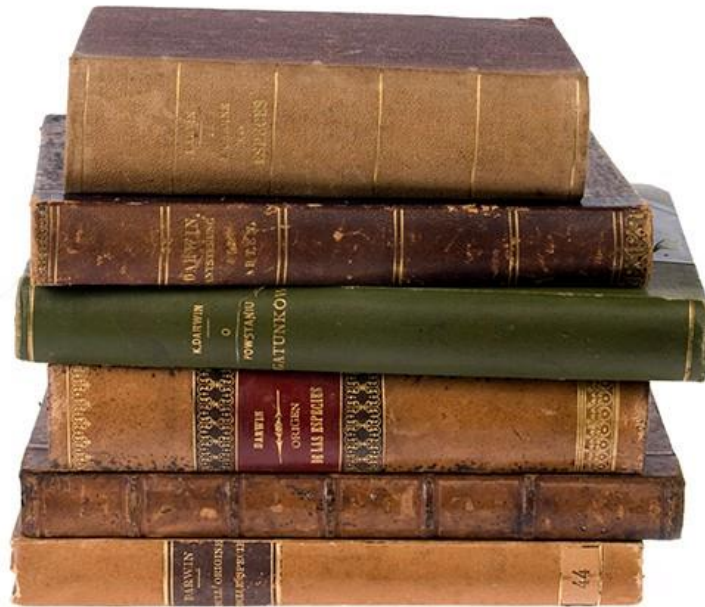
Both had studied the natural world extensively and made a number of observations that were critical to the development of the theory.

The following year, Darwin published the contentious but now-celebrated book, 'On the Origin of Species'.

## On the Origin of Species

Published in 1859, On the Origin of Species provoked outrage from some members of the Church of England as it implicitly contradicted the belief in divine creation.

Despite accusations of blasphemy, the book quickly became a bestseller.



Foreign language first editions of some works by Charles Darwin.

## Great apes

The Descent of Man, and Selection in Relation to Sex - which Darwin published in 1871 - fuelled even greater debate as it suggested that humans descended from apes.

The Bishop of Oxford famously asked Thomas Huxley, one of Darwin's most enthusiastic supporters, whether it was through his grandfather or grandmother that he claimed descent from a monkey.

Despite the attacks, Darwin's conviction in the scientific explanation that best fit the available evidence remained unshaken.

He was keen for his ideas to reach as many people as possible and for his books to be read in many different languages. Part of his success has been attributed to his conversational and approachable writing style.

On the Origin of Species was so influential that within a year it had been published in German. In Darwin's lifetime, his book was translated into German, Danish, Dutch, French, Hungarian, Italian, Polish, Russian, Serbian, Spanish and Swedish.

Our Library has 478 editions of On the Origin of Species in 38 languages and in Braille.

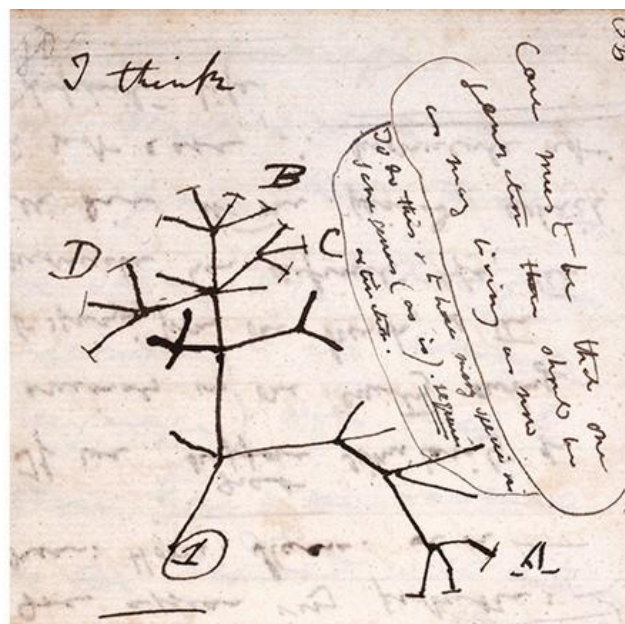




**Japanese translation of *On the Origin of Species*, *Shu No Kigen*, published in 1914 as a five-volume, pocket-sized edition.**

## Darwin and the tree of life

Charles Darwin used the concept of a tree of life in the context of the theory of evolution to illustrate that all species on Earth are related and evolved from a common ancestor.



**Darwin's first sketch of the tree of life, found in one of his notebooks from 1837. Image reproduced with**

**kind permission of the Syndics of [Cambridge University Library](#).**

The tips of the branches show the species that are still alive today. The tree also shows those that are now extinct. Darwin explained:

'From the first growth of the tree, many a limb and branch has decayed and dropped off; and these fallen branches of various sizes may represent those whole orders, families, and genera which have now no living representatives, and which are known to us only in a fossil state.'

Orders, families and genera are all groups that can be used to classify organisms.

The lines on the tree show evolutionary relationships between species. For example, a recent version of the tree of life would show a line between some types of dinosaurs and the **earliest birds**, as scientists reason that birds evolved from a particular lineage of dinosaurs.

This means that species that are closely related are found close together stemming from the same branch.

For example, humans, chimpanzees, gorillas and orangutans are all great apes, so they all belong to the same branch of the tree of life.

## Darwin's legacy

Although Darwin's theory of evolution has been modified over time, it remains fundamental to the study of the natural world. Darwin changed not only the way we see all organisms, but also the way we see ourselves.



# Charles Darwin University

[Australia]

<https://www.cdu.edu.au/about-cdu>

## Welcome

Charles Darwin University is a truly unique institution.

With our home and our heart in the Northern Territory, we embrace the inclusive, resilient, and courageous spirit of the NT in our campuses and delivery sites that reach a diverse footprint from the capital cities of Darwin, Brisbane and Sydney to the regional hubs of Alice Springs, Palmerston and Katherine and our remote locations in Nhulunbuy, Tennant Creek and on Country - in community, with the community.

Our multi-campus, dual-sector status, virtual and online expertise, course profile, research activities, delivery methods, and operation result from our commitment to the regions in which we operate.

The Northern Territory spans approximately one-sixth of Australia's landmass and yet is home to just one per cent of the population, of whom 30 per cent are First Nations Peoples.

Due to our location, we are in an enviable position to contribute to the future opportunity of Northern Australia, and our neighbours in the Asia Pacific, through our innovative and impactful training, education, and research.

The University now has the new Strategic Plan in place, which will guide the development of our university over the next five years. It gives us a very clear road map to building a bigger, better and stronger university, valuing and empowering our people to make a difference.

CDU believes in the transformative power of training, education and research to change people's lives for the better. We have a collective responsibility to make sure that our training, education and research are not only high quality and delivered by outstanding educators and researchers but are accessible and meaningful. What we do matters to our communities.

We are a deeply connected university, working in partnership and collaboration with First Nations peoples, our communities and industries, government, and alumni to address the needs of the Northern Territory and regional, rural, and remote people nationally and globally.

We are committed to making significant contributions to the social, economic and environmental sustainability of the NT and Northern Australia and to export our expertise nationally and globally.

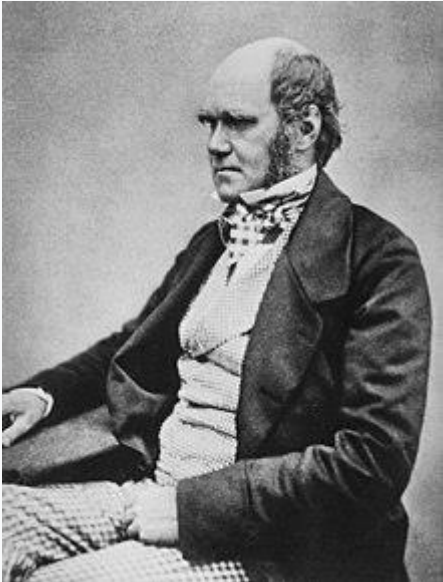
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# Charles Darwin


[https://en.wikipedia.org/wiki/Charles\\_Darwin](https://en.wikipedia.org/wiki/Charles_Darwin)

**Charles Robert Darwin** ([/ˈdɑːrwɪn/](#) [DAR-win](#); 12 February 1809 – 19 April 1882) was an English [naturalist](#), [geologist](#), and widely known for his contributions to [evolutionary biology](#). His proposition that all species of life have descended from a [common ancestor](#) is now generally accepted and considered a fundamental scientific concept. In a joint presentation with [Alfred Russel Wallace](#), he introduced his scientific theory that

this [branching pattern](#) of [evolution](#) resulted from a process he called [natural selection](#), in which the [struggle for existence](#) has a similar effect to the artificial selection involved in [selective breeding](#). Darwin has been described as one of the most influential figures in [human history](#) and was honoured by [burial in Westminster Abbey](#).

<div>Charles Darwin</div> <div>JP FRS FRGS FLS FZS</div> <div></div> <div>Darwin, c. 1854, when he was preparing <a href="#">On the Origin of Species</a><sup>[1]</sup></div>	
Born	<div>Charles Robert Darwin</div> <div>12 February 1809</div> <div><a href="#">Shrewsbury</a>, <a href="#">Shropshire</a>, England</div>
Died	<div>19 April 1882 (aged 73)</div> <div><a href="#">Down House</a>, <a href="#">Down</a>, <a href="#">Kent</a>, England</div>
Resting place	<a href="#">Westminster Abbey</a>
Education	<div><ul style="list-style-type: none"><li><a href="#">University of Edinburgh</a></li><li><a href="#">Christ's College, Cambridge</a> (BA, MA)<sup>[2]</sup></li></ul></div>
Known for	<a href="#">Natural selection</a>
Spouse	<a href="#">Emma Wedgwood</a>
Children	<div>(m. 1839)</div> <div>10,</div> <div>including <a href="#">William</a>, <a href="#">Henrietta</a>, <a href="#">George</a>, <a href="#">Francis</a>, <a href="#">Leonard</a> and <a href="#">Horace</a></div>
Parents	<div><ul style="list-style-type: none"><li><a href="#">Robert Darwin</a></li><li><a href="#">Susannah Wedgwood</a></li></ul></div>
Family	<a href="#">Darwin–Wedgwood</a>
Awards	<div><ul style="list-style-type: none"><li><a href="#">FRS</a> (1839)<sup>[3]</sup></li><li><a href="#">Royal Medal</a> (1853)<sup>[4]</sup></li><li><a href="#">Wollaston Medal</a> (1859)<sup>[4]</sup></li><li><a href="#">Copley Medal</a> (1864)<sup>[4]</sup></li><li><a href="#">Pour le Mérite</a> (1867)<sup>[4]</sup></li><li><a href="#">Baly Medal</a> (1879)<sup>[4]</sup></li></ul></div>
Writing career	



Notable works	<ul style="list-style-type: none"> <li>• <a href="#">The Voyage of the Beagle</a></li> <li>• <a href="#">On the Origin of Species</a></li> <li>• <a href="#">The Descent of Man</a></li> </ul>
•	
Scientific career	
Fields	<ul style="list-style-type: none"> <li>• <a href="#">Natural history</a></li> <li>• <a href="#">Geology</a></li> </ul>
Institutions	<a href="#">Geological Society of London</a>
Academic advisors	<ul style="list-style-type: none"> <li>• <a href="#">John Stevens Henslow</a></li> <li>• <a href="#">Adam Sedgwick</a></li> </ul>
<a href="#">Author abbrev. (botany)</a>	Darwin
<a href="#">Author abbrev. (zoology)</a>	Darwin
Signature	
	

Darwin's early interest in nature led him to neglect his medical education at the [University of Edinburgh](#); instead, he helped to investigate [marine invertebrates](#). His studies at the [University of Cambridge's Christ's College](#) from 1828 to 1831 encouraged his passion for [natural science](#). However, it was his [five-year voyage](#) on [HMS Beagle](#) from 1831 to 1836 that truly established Darwin as an eminent geologist. The observations and theories he developed during his voyage supported [Charles Lyell's concept of gradual geological change](#). Publication of his [journal of the voyage](#) made Darwin famous as a popular author.

Puzzled by the geographical distribution of wildlife and fossils he collected on the voyage, Darwin began detailed investigations and, in 1838, devised his theory of natural selection. Although he discussed his ideas with several naturalists, he needed time for extensive research, and his geological work had priority. He was writing up his theory in 1858 when Alfred Russel Wallace sent him an essay that described the same idea, prompting the immediate joint submission of [both their theories](#) to the [Linnean Society of London](#). Darwin's work established evolutionary descent with modification as the dominant scientific explanation of natural diversification. In 1871, he examined [human evolution](#) and [sexual selection](#) in [The Descent of Man, and Selection in Relation to Sex](#), followed by [The Expression of the Emotions in Man and Animals](#) (1872). His research on plants was published in a series of books, and in his final book, [The Formation of Vegetable Mould, through the Actions of Worms](#) (1881), he examined [earthworms](#) and their effect on soil.

Darwin published his theory of evolution with compelling evidence in his 1859 book [On the Origin of Species](#). By the 1870s, the scientific community and a majority of the educated public had accepted [evolution as a fact](#).

However, many initially favoured [competing explanations](#) that gave only a minor role to natural selection, and it was not until the emergence of the [modern evolutionary synthesis](#) from the 1930s to the 1950s that a broad consensus developed in which natural selection was the basic mechanism of evolution. Darwin's scientific discovery is the unifying theory of the [life sciences](#), explaining the [diversity of life](#).



**A chalk drawing of the seven-year-old Darwin in 1816, with a potted plant, by [Ellen Sharples](#)**



**[Bicentennial](#) portrait by [Anthony Smith](#) of Darwin as a student, in the courtyard at [Christ's College, Cambridge](#), where he had rooms.**



The round-the-world voyage of the Beagle, 1831–1836



Darwin (right) on the Beagle's deck at Bahía Blanca in Argentina, with fossils; caricature by Augustus Earle, the initial ship's artist.



As HMS Beagle surveyed the coasts of South America, Darwin theorised about geology and the extinction of giant mammals; watercolour by the ship's artist Conrad Martens, who replaced Augustus Earle, in Tierra del Fuego

## Children

<a href="#">William Erasmus Darwin</a>	27 December 1839 –	8 September 1914
<a href="#">Anne Elizabeth Darwin</a>	2 March 1841 –	23 April 1851
Mary Eleanor Darwin	23 September 1842 –	16 October 1842
<a href="#">Henrietta Emma Darwin</a>	25 September 1843 –	17 December 1927
<a href="#">George Howard Darwin</a>	9 July 1845 –	7 December 1912
Elizabeth Darwin	8 July 1847 –	8 June 1926
<a href="#">Francis Darwin</a>	16 August 1848 –	19 September 1925
<a href="#">Leonard Darwin</a>	15 January 1850 –	26 March 1943
<a href="#">Horace Darwin</a>	13 May 1851 –	29 September 1928
Charles Waring Darwin	6 December 1856 –	28 June 1858

The Darwins had ten children: two died in infancy, and Annie's death at the age of ten had a devastating effect on her parents. Charles was a devoted father and uncommonly attentive to his children. Whenever they fell ill, he feared that they might have inherited weaknesses from [inbreeding](#) due to the close family ties he shared with his [wife and cousin](#), Emma Wedgwood. He examined inbreeding in his writings, contrasting it with the advantages of [outcrossing](#) in many species.



**Emma Darwin with Charles Waring Darwin.**

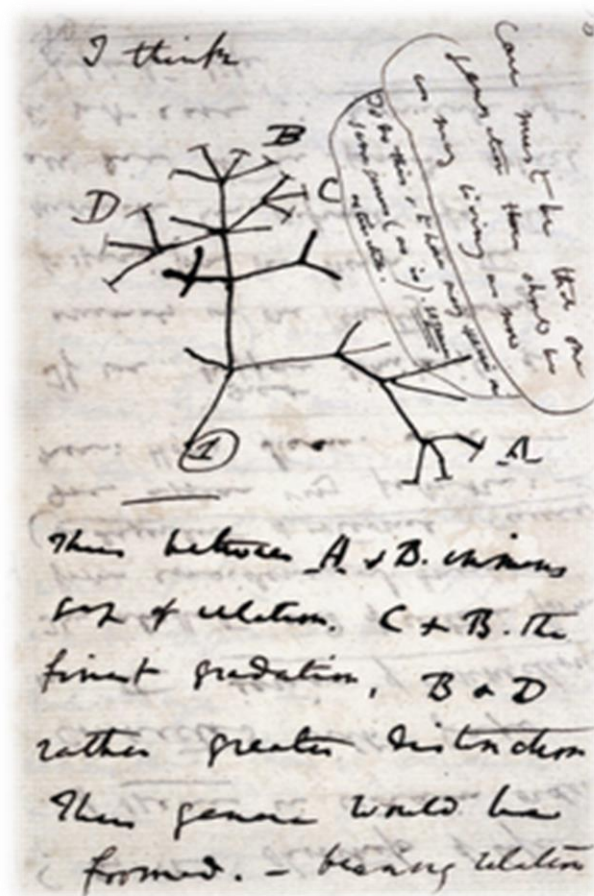
Charles Waring Darwin, born in December 1856, was the tenth and last of the children. Emma Darwin was aged 48 at the time of the birth, and the child was mentally subnormal and never learnt to walk or talk. He probably had [Down syndrome](#), which had not then been medically described. The evidence is a photograph by William Erasmus Darwin of the infant and his mother, showing a characteristic head shape, and the family's observations of the child.<sup>[191]</sup> Charles Waring died of scarlet fever on 28 June 1858, when Darwin wrote in his journal: "Poor dear Baby died."

Of his surviving children, [George](#), Francis and [Horace](#) became [Fellows of the Royal Society](#), distinguished as an astronomer, botanist and civil engineer, respectively. All three were knighted. Another son, [Leonard](#), went on to be a soldier, politician, economist, [eugenicist](#), and mentor of the statistician and evolutionary biologist Ronald Fisher.





While still a young man, Darwin joined the scientific elite;  
 portrait by George Richmond.



In mid-July 1837 Darwin started his "B" notebook on *Transmutation of Species*,  
 and on page 36 wrote "I think" above his first evolutionary tree.



Darwin's wife Emma Wedgwood.



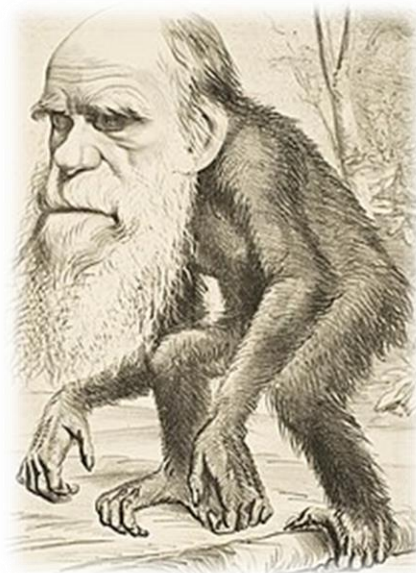
Darwin in 1842 with his eldest son, William Erasmus Darwin.



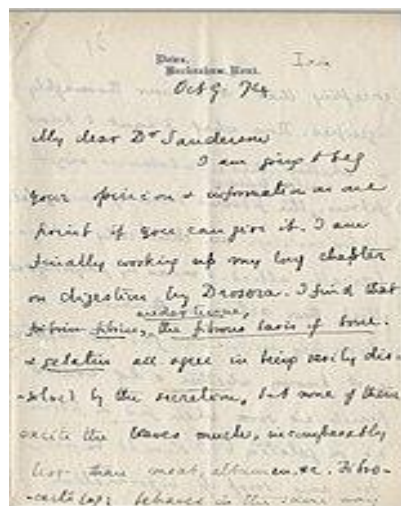
Darwin's "sandwalk" at Down House in Kent was his usual "thinking path"



Darwin aged 46 in 1855, by then working towards publication of his theory of natural selection. He wrote to Joseph Hooker about this portrait, "if I really have as bad an expression, as my photograph gives me, how I can have one single friend is surprising."



An 1871 caricature following publication of The Descent of Man was typical of many showing Darwin with an ape body, identifying him in popular culture as the leading author of evolutionary theory.



Letter of enquiry from Charles Darwin  
to the physiologist John Burdon-Sanderson





**Punch's almanac for 1882, published shortly before Darwin's death, depicts him amidst evolution from chaos to Victorian gentleman with the title *Man Is But A Worm*.**



**The adjoining tombs of the scientists John Herschel and Charles Darwin in the nave of Westminster Abbey, London.**

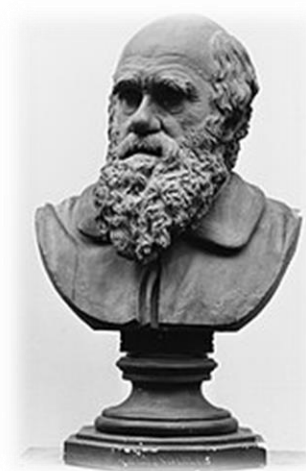


**In 1851 Darwin was devastated when his daughter Annie died; by then his faith in Christianity had dwindled, and he had stopped going to church.**





**Statue in the Natural History  
Museum in London.**



**Darwin bust by Joseph Echter.**



**Unveiling in 1897 of the Darwin Statue at the former  
Shrewsbury School building where he had studied**

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# Charles Darwin Bibliography

[https://en.wikipedia.org/wiki/Charles\\_Darwin\\_bibliography](https://en.wikipedia.org/wiki/Charles_Darwin_bibliography)

{**Also, visit the Web Link:** <https://darwin-online.org.uk/>}

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- 1835: [Extracts from Letters to Henslow](#) (Read at a meeting of the [Cambridge Philosophical Society](#) on 16 November 1835, with comments by [John Stevens Henslow](#) and [Adam Sedgwick](#), and printed for private distribution dated 1 December 1835. Selected remarks had been read by Sedgwick to the [Geological Society of London](#) on 18 November 1835, and these were summarised in *Proceedings of the Geological Society* published in 1836. Further extracts were published in the [Entomological Magazine](#) and, with a review, in the [Magazine of Natural History](#). A reprint was issued in 1960, again for private distribution.)
- 1836: *A LETTER, Containing Remarks on the Moral State of TAHITI, NEW ZEALAND, &c. - BY CAPT. R. FITZROY AND C. DARWIN, ESQ. OF H.M.S. 'Beagle.'*
- 1838-1843: [Zoology of the Voyage of H.M.S. Beagle](#): published between 1839 and 1843 in five Parts (and nineteen numbers) by various authors, edited and superintended by Charles Darwin, who contributed sections to two of the Parts:
  - 1838: Part 1 No. 1 Fossil Mammalia, by [Richard Owen](#) (Preface and Geological introduction by Darwin)
  - 1838: Part 2 No. 1 Mammalia, by [George R. Waterhouse](#) (Geographical introduction and A notice of their habits and ranges by Darwin)
- 1839: *Questions About the Breeding of Animals*
- 1839: *Journal and Remarks* ([The Voyage of the Beagle](#)) (Second edition:1845)
- 1841: [The Gardeners' Chronicle](#) (contributor)
- 1842: [The Structure and Distribution of Coral Reefs](#) (Second edition:1874)
- 1844: [Geological Observations on the Volcanic Islands visited during the voyage of H.M.S. Beagle](#) (Second edition:1876)
- 1846: [Geological Observations on South America](#)
- 1849: *Geology from A Manual of scientific enquiry; prepared for the use of Her Majesty's Navy; and adapted for travellers in general.*, [John F.W. Herschel](#) ed.
- 1851: *A Monograph of the Sub-class Cirripedia, with Figures of all the Species. The Lepadidae; or, Pedunculated Cirripedes.*
- 1851: *A Monograph on the Fossil Lepadidae, or, Pedunculated Cirripedes of Great Britain*

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- 1854: *A Monograph on the Fossil Balanidae and Verrucidae of Great Britain*
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- 1862: [On the various contrivances by which British and foreign orchids are fertilised by insects](#) (Second edition:1877)
- 1865: [The Movements and Habits of Climbing Plants](#) (Linnean Society paper, published in book form in 1875) (Illustrated by [George Darwin](#))
- 1868: [The Variation of Animals and Plants Under Domestication](#) (2 volumes) (Second edition:1875, edited by [Francis Darwin](#) in 1905)
- 1871: [The Descent of Man, and Selection in Relation to Sex](#) (2 volumes) (Second edition:1874, assisted by [George Darwin](#) and [Thomas Henry Huxley](#), revised and augmented second edition: 1877)
- 1872: [The Expression of the Emotions in Man and Animals](#) (revised by [Francis Darwin](#) in 1890, restored and revised edition edited by [Paul Ekman](#) in 1999)
- 1875: [Insectivorous Plants](#) (Second edition edited by [Francis Darwin](#) with footnotes and additions in 1888)
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- 1879: "Preface and 'a preliminary notice'" in [Ernst Krause](#)'s *Erasmus Darwin*
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2. ^ Jump up to: Extracts from letters addressed to Professor Henslow. Cambridge: [privately printed]
3. ^ Proceedings of the Geological Society 2: 210-212
4. ^ South African Christian Recorder 2 (4) (Sept. 1836): 221-238

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## List of things named after Charles Darwin

[https://en.wikipedia.org/wiki/List\\_of\\_things\\_named\\_after\\_Charles\\_Darwin](https://en.wikipedia.org/wiki/List_of_things_named_after_Charles_Darwin)

Several places, concepts, institutions, and things are namesakes of the English biologist Charles Darwin:



## Places

- [Charles Darwin National Park](#)
- [Charles Darwin Foundation](#)
- [Charles Darwin Research Station](#)
- [Charles Darwin School](#)
- [Charles Darwin University](#)
- [Darwin College, Cambridge](#)
- [Darwin, Falkland Islands](#)
- [Darwin, Northern Territory](#)
- [Darwin Glacier \(California\)](#)
- [Darwin Guyot](#), a [seamount](#) in the [Pacific Ocean](#)
- [Darwin Island](#), [Galapagos Islands](#)
- [Darwin Island \(Antarctica\)](#)
- [Darwin Nature Reserve](#)
- [Darwin Sound \(Canada\)](#)
- [Darwin's Arch](#)
- [Mount Darwin \(Antarctica\)](#)
- [Mount Darwin \(California\)](#)
- [Mount Darwin \(Tasmania\)](#)
- [Mount Darwin \(Zimbabwe\)](#)

## Things named after Darwin in relation to his *Beagle* voyage

- [Cordillera Darwin](#)
- [Darwin's finches](#)
- [Darwin's frog](#)
- [Darwin's rhea](#)
- [Darwin Sound](#)
- [Mount Darwin \(Andes\)](#)

## Scientific names of organisms

Some 250 species and several higher groups bear Darwin's name; most are insects.

- [Darwinilus](#), a rove beetle
- [Darwinius](#), an extinct primate
- [Darwinopterus](#), a genus of pterosaur
- [Darwinula](#), a genus of [seed shrimp](#)
- [Darwinivelia](#), a [water treader](#) genus

- [Darwinysius](#), a [seed bug](#)
- [Darwinomya](#), a genus of flies
- [Darwinella](#), a sponge genus
- [Darwinsaurus](#), a dinosaur
- [Darwinhydrus](#), a diving beetle
- [darwini](#) (multiple species)
- [darwinii](#) (multiple species)
- [Minervarya charlesdarwinii](#), a frog
- [Ramalina darwiniana](#), lichen

### **Philosophies**

- [Darwinism](#)
- [Social Darwinism](#)

### **Other**

- [Darwin](#), a unit of evolutionary change
- [Darwin](#), an [operating system](#)
- [Darwin \(ESA\)](#) (a proposed satellite system)
- [Darwin Awards](#)
- [Darwin Medal](#)
- [Darwin Prize](#)
- [Darwin fish](#)
- [Division of Darwin](#), a former electoral division in Australia
- [1991 Darwin](#), a stony Florian [asteroid](#)
- [Darwin \(lunar crater\)](#) a lunar crater
- [Darwin \(Martian crater\)](#) a martian crater
- [Darwinia \(plant\)](#), species named not after Charles Darwin but his grandfather [Erasmus Darwin](#)

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## **Commemoration**

## **Charles Darwin**

[https://en.wikipedia.org/wiki/Commemoration\\_of\\_Charles\\_Darwin](https://en.wikipedia.org/wiki/Commemoration_of_Charles_Darwin)

**Commemoration of Charles Darwin** began with geographical features named after [Darwin](#) while he was still on the [Beagle survey voyage](#), continued after his return with the naming of species he had collected, and extended further with his increasing fame. Many geographical

features, species and institutions bear his name. Interest in his work has led to scholarship and publications, nicknamed the [\*Darwin Industry\*](#), and his life is remembered in fiction, film and TV productions as well as in numerous biographies. [Darwin Day](#) has become an annual event, and in 2009 there were worldwide celebrations to mark the bicentenary of Darwin's birth and the 150th anniversary of the publication of [\*On the Origin of Species\*](#).

### **Geographical features**

During Darwin's lifetime, many geographical features were given his name. An expanse of water adjoining the [Beagle Channel](#) was named [Darwin Sound](#) by [HMS Beagle](#) captain [Robert FitzRoy](#) after Darwin's prompt action, along with two or three of the men, saved them from being marooned on a nearby shore when a collapsing [glacier](#) caused a large wave that would have swept away their boats, and the nearby [Mount Darwin](#) in the [Andes](#) was named in celebration of Darwin's 25th birthday. Another [Darwin Sound](#) in British Columbia's [Queen Charlotte Islands](#), between [Moresby Island](#) and [Lyell Island](#), was named in 1878 by Canada's then-chief geographer [George M. Dawson](#) for Darwin. When the *Beagle* was surveying Australia in 1839, Darwin's friend [John Lort Stokes](#) sighted a natural harbour which the ship's captain [Wickham](#) named [Port Darwin](#). The settlement of [Palmerston founded there in 1869](#) was officially renamed [Darwin](#) in 1911. It became the capital city of Australia's [Northern Territory](#).

### **Scientific names**



The holotype of *Darwinilus sedarisi*, published on Darwin's 205th birthday

More than 300 [species](#), nine [genera](#), and some higher taxa have been named after Darwin. In 1837, the ornithologist [John Gould](#) named a specimen Darwin had collected in Patagonia *Rhea darwinii*, priority was given to [d'Orbigny](#)'s name for it, *Rhea pennata*, but it still has the common name of [Darwin's rhea](#). Similarly, [Darwin's frog](#), *Rhinoderma darwinii*, was so named because Darwin discovered the species in Chile, and the family [Rhinodermatidae](#) are commonly known as Darwin's frogs.

In 2009, a remarkably complete fossil [primate](#) from 47 million years ago was announced as a significant [transitional fossil](#), and named [Darwinius](#) to celebrate Darwin's bicentenary.

Although related to American [Emberizidae](#) or [tanagers](#) rather than [finches](#), the group of species related to those Darwin found in the [Galápagos Islands](#) became popularly known as "[Darwin's finches](#)" following publication of [David Lack](#)'s book of that name in 1947, fostering inaccurate legends about their significance to his work.

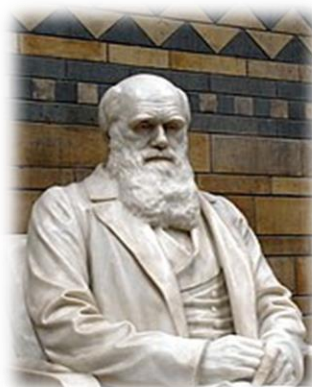
### **Genera include:**

- [Darwinilus](#), a genus of [staphylinid](#) beetles
- [Darwiniothamnus](#), a genus of flowering plant
- [Darwinius](#), a genus of Eocene primates
- [Darwinopterus](#), a genus of long-tailed [pterosaurs](#) from China
- [Darwinula](#), an [ostracod](#) genus in the eponymous suborder [Darwinulocopina](#), superfamily [Darwinuloidea](#), family [Darwinulidae](#).

**Species** Over 300 species are named [darwinii](#), [darwini](#), or *charlesdarwini*. Examples include:

- [Caerostris darwini](#), Darwin's bark spider, an [orb-weaver spider](#) discovered in [Madagascar](#)
- [Demandasaurus darwini](#), a [rebbachisaurid sauropod dinosaur](#) from Spain.<sup>[11]</sup>
- [Minervarya charlesdarwini](#), an endangered frog of Southeast Asia

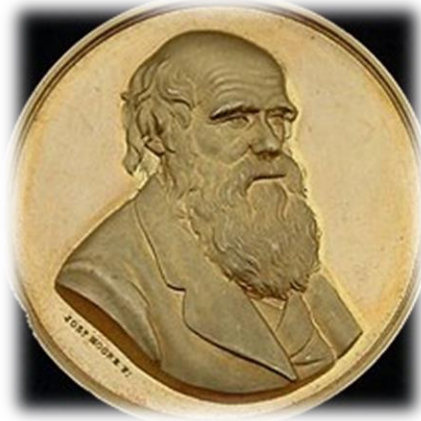
### **Institutions**





### **Statue of Charles Darwin at the Natural History Museum in London**

Darwin in Australia features [Charles Darwin University](#)<sup>[12]</sup> and [Charles Darwin National Park](#).<sup>[13]</sup> However, [Darwin College, Cambridge](#), founded in 1964, was named in honour of the Darwin family, in part because they owned some of the site.<sup>[14]</sup>



**Gold Darwin Prize medal of the [Midland Union of Natural History Societies](#), awarded to [James Eustace Bagnall](#) in 1888**

In 1880, Darwin consented to a request from the [Midland Union of Natural History Societies](#) to name their annual prize and medal in his honour. The medal, by [Joseph Moore](#), has an engraving of a bust of Darwin, on its obverse. The wax model for the medal, and the unissued 1886 medal, which was sent to Darwin's family at that time, are now at Darwin's former home, [Down House](#), today a museum in his honour. The [Linnean Society of London](#) has commemorated Darwin's achievements by the award of the [Darwin-Wallace Medal](#) since 1908.

In the [Galápagos Islands](#), the [Charles Darwin Foundation](#) based at the [Charles Darwin Research Station](#) does research and conservation. To mark 2009 they are helping to reintroduce to [Floreana Island](#) (Charles Island) the specific [mockingbird](#) which first alerted Darwin to species being unique to islands. It was eradicated from the main island by European species, mainly rats and goats, but survived on two small islands nearby.

Darwin came fourth in the [100 Greatest Britons](#) poll sponsored by the [BBC](#) and voted for by the public. In 2000 Darwin's image appeared on the [Bank of England ten pound note](#), replacing [Charles Dickens](#). His impressive, luxuriant beard (which was reportedly difficult to forge) was said to be a contributory factor to the bank's choice. The design also featured a [hummingbird](#) and [HMS Beagle](#).

As a humorous celebration of evolution, the annual [Darwin Award](#) is bestowed on individuals who "improve our [gene pool](#) by removing themselves from it."

## **Darwin day, and 2009 commemorations**

[Darwin Day](#) has become an annual celebration, and in 2009 the bicentenary of Darwin's birth and the 150th anniversary of the publication of [\*On the Origin of Species\*](#) were celebrated by events and publications around the world. The Darwin exhibition, after opening at the [American Museum of Natural History](#) in New York City in 2006, was shown at the [Museum of Science, Boston](#), the [Field Museum](#) in Chicago, the [Royal Ontario Museum](#) in Toronto, then from 14 November 2008 to 19 April 2009 in the [Natural History Museum](#), London, as part of the *Darwin200* programme of events across the United Kingdom. It also appears at the [Palazzo delle Esposizioni](#) in Rome from 12 February to 3 May 2009. The [University of Cambridge](#) featured a festival in July 2009. His birthplace, [Shrewsbury](#), celebrated with "Darwin's Shrewsbury 2009 Festival" events during the year. An [abstract](#) sculpture, [\*The Quantum Leap\*](#), was erected for the celebrations, and unveiled on 8 October 2009 by [Randal Keynes](#), a great-great-grandson of Darwin. A 'geological garden' was created on its site to mark the interest which Darwin had in the field during his childhood.



***The Quantum Leap*, an abstract sculpture erected  
in 2009 in Darwin's birthplace, [Shrewsbury](#),  
for the bi-centennial of his birth**

In the United Kingdom a special commemorative issue of the [two pound coin](#) shows a portrait of Darwin facing a [chimpanzee](#) surrounded by the inscription 1809 DARWIN 2009, with the edge inscription ON THE ORIGIN OF SPECIES 1859. Collector versions of the coin have been released at a premium, and during the year the coins will be available from banks and post offices at face value. To celebrate Darwin's life and achievements, the BBC has commissioned numerous television and radio programmes known collectively as the [BBC Darwin Season](#).

In September 2008, the [Church of England](#) issued an article saying that the 200th anniversary of his birth was a fitting time to apologise to Darwin "for misunderstanding you and, by getting our first reaction wrong, encouraging others to misunderstand you still".

Since 2004, [Universidad Francisco Marroquín \(UFM\)](#) in Guatemala, has celebrated Darwin Day with a series of conferences that includes international speakers.

On 22 January 2013, a [resolution](#) was introduced to the [United States Congress](#) designating 12 February 2013 (Charles Darwin's 204th birthday) as "[Darwin Day](#)" to recognise "the importance of sciences in the betterment of humanity".

Darwin's alma mater, [Christ's College](#), commemorated the bicentenary with the unveiling of a life-sized bronze statue of the young Darwin (aged 22). The statue was created by [Anthony Smith](#) and unveiled by [Prince Philip](#) on 12 February 2009. It now forms the centrepiece of the college's *Darwin Garden*.

## Media

Numerous biographies of Darwin have been written, and the 1980 [biographical novel](#) *The Origin* by [Irving Stone](#) gives a closely researched fictional account of Darwin's life from the age of 22 onward.

[The Low Anthem](#)'s 2008 studio album *Oh My God, Charlie Darwin* is named after Darwin, whose theories influenced the lyrics and themes.

A dramatic motion picture entitled *Creation* was released in 2009, joining a short list of film dramas about Darwin, including *The Darwin Adventure*, released in 1972.

*Beagle: In Darwin's wake* was a [Dutch-Flemish](#) television series from 2009 and 2010 initiated by the [VPRO](#) in collaboration with [Teleac](#) and [Canvas](#) to commemorate the 150th anniversary of Charles Darwin's *On the Origin of Species*. The series is centered on an 8-month voyage around the world (commenced on September 1, 2009) on board of the clipper [Stad Amsterdam](#) which follows the route of the [five-year-long voyage](#) of Charles Darwin on board of the ship [HMS Beagle](#) between 1831 and 1836.

Darwin is featured as an essential character in the 2004 comedy novel *The Pirates! In an Adventure with Scientists*. He also appears in the 2012 [movie adaptation with the same name](#).

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# Portraits of Charles Darwin

[https://en.wikipedia.org/wiki/Portraits\\_of\\_Charles\\_Darwin](https://en.wikipedia.org/wiki/Portraits_of_Charles_Darwin)

There are many known **portraits of Charles Darwin**. [Darwin](#) came from a wealthy family and became a well-known naturalist and author, and [portraits](#) were made of him in childhood, adulthood and old age. Darwin's life (1809-1882) spanned the [development of photography](#), and early portraits of Darwin are drawn or painted, while many later portraits are monochrome photographs. After the publication and dissemination of the controversial [On the Origin of Species](#) in 1859, Darwin was also the subject of [numerous caricatures](#).

Darwin's visage, particularly his iconic beard, continues to be culturally significant and widely recognisable into the 21st century. According to historian Janet Browne, Darwin's capacity to commission photographs of himself—and their widespread reproduction as [carte de visite](#) and [cabinet card](#) photographs—helped to cement the lasting connection between Darwin and the theory of evolution in popular thought (largely to the exclusion of the many others who also contributed to the development of evolutionary theory), especially as these portraits were reinterpreted in caricature. At that time few could afford to commission portrait photographs, and this gave Darwin an advantage in gaining public recognition.

Especially in his last decades, as [his illness](#) progressed, Darwin expressed frustration about sitting for photographs. He turned down an opportunity in 1869 to sit for a portrait with [Alfred Russel Wallace](#), explaining that sitting for photographs "is what I hate doing & wastes a whole day owing to my weak health; and to sit with another person would cause still more trouble & delay." Nevertheless, there are at least 53 known photographs of Darwin, according to [Gene Kritsky](#), a scholar of Darwin photos.

**[Kindly visit the Web Link to see:](#)**

## **Chronological list of portraits**

[https://en.wikipedia.org/wiki/Portraits\\_of\\_Charles\\_Darwin](https://en.wikipedia.org/wiki/Portraits_of_Charles_Darwin)



# Universal Darwinism

[https://en.wikipedia.org/wiki/Universal\\_Darwinism](https://en.wikipedia.org/wiki/Universal_Darwinism)

**Universal Darwinism**, also known as **generalized Darwinism**, **universal selection theory**, or **Darwinian metaphysics**, is a variety of approaches that extend the theory of [Darwinism](#) beyond its original domain of [biological evolution](#) on Earth. Universal Darwinism aims to formulate a generalized version of the mechanisms of [variation](#), [selection](#) and [heredity](#) proposed by [Charles Darwin](#), so that they can apply to explain [evolution](#) in a wide variety of other domains, including [psychology](#), [linguistics](#), [economics](#), [culture](#), [medicine](#), [computer science](#), and [physics](#).

## **Basic mechanisms**

At the most fundamental level, [Charles Darwin](#)'s theory of [evolution](#) states that organisms evolve and [adapt](#) to their environment by an iterative process. This process can be conceived as an [evolutionary algorithm](#) that searches the space of possible forms (the [fitness landscape](#)) for the ones that are best adapted. The process has three components:

- [variation](#) of a given form or template. This is usually (but not necessarily) considered to be blind or random, and happens typically by [mutation](#) or [recombination](#).
- [selection](#) of the [fittest](#) variants, i.e. those that are best suited to survive and reproduce in their given environment. The unfit variants are eliminated.
- [heredity](#) or retention, meaning that the features of the fit variants are retained and passed on, e.g. in offspring.

After those fit variants are retained, they can again undergo variation, either directly or in their offspring, starting a new round of the [iteration](#). The overall mechanism is similar to the problem-solving procedures of [trial-and-error](#) or generate-and-test: evolution can be seen as searching for the best solution for the problem of how to survive and reproduce by generating new trials, testing how well they perform, eliminating the failures, and retaining the successes.

The generalization made in "universal" Darwinism is to replace "organism" by any recognizable pattern, phenomenon, or system. The first requirement is that the pattern can "survive" (maintain, be retained) long enough or "reproduce" (replicate, be copied) sufficiently frequently so as not to disappear immediately. This is the heredity component: the information in the pattern must be retained or passed on. The second requirement is that during survival and reproduction variation (small

changes in the pattern) can occur. The final requirement is that there is a selective "preference" so that certain variants tend to survive or reproduce "better" than others. If these conditions are met, then, by the logic of natural selection, the pattern will evolve towards more adapted forms.

Examples of patterns that have been postulated to undergo variation and selection, and thus adaptation, are [genes](#), ideas ([memes](#)), theories, technologies, [neurons](#) and their connections, words, computer programs, firms, [antibodies](#), institutions, law and judicial systems, quantum states and even whole universes.

## **History and development**

Conceptually, "evolutionary theorizing about cultural, social, and economic phenomena" preceded Darwin, but was still lacking the concept of natural selection. Darwin himself, together with subsequent 19th-century thinkers such as [Herbert Spencer](#), [Thorstein Veblen](#), [James Mark Baldwin](#) and [William James](#), was quick to apply the idea of selection to other domains, such as language, psychology, society, and culture. However, this evolutionary tradition was largely banned from the social sciences in the beginning of the 20th century, in part because of the bad reputation of [social Darwinism](#), an attempt to use Darwinism to justify social inequality.

Starting in the 1950s, [Donald T. Campbell](#) was one of the first and most influential authors to revive the tradition, and to formulate a generalized Darwinian [algorithm](#) directly applicable to phenomena outside of biology. In this, he was inspired by [William Ross Ashby](#)'s view of [self-organization](#) and intelligence as fundamental processes of selection. His aim was to explain the development of [science](#) and other forms of [knowledge](#) by focusing on the variation and selection of ideas and theories, thus laying the basis for the domain of [evolutionary epistemology](#). In the 1990s, Campbell's formulation of the mechanism of "blind-variation-and-selective-retention" (BVSr) was further developed and extended to other domains under the labels of "universal selection theory" or "universal selectionism" by his disciples [Gary Cziko](#), Mark Bickhard and [Francis Heylighen](#).

[Richard Dawkins](#) may have first coined the term "universal Darwinism" in 1983 to describe his conjecture that any possible life forms existing outside the solar system would evolve by natural selection just as they do on Earth.<sup>[17]</sup> This conjecture was also presented in 1983 in a paper entitled "The Darwinian Dynamic" that dealt with the evolution of order in living systems and certain nonliving physical systems. It was suggested "that 'life', wherever it might exist in the universe, evolves according to the same dynamical law" termed the Darwinian dynamic. [Henry Plotkin](#) in his 1997 book<sup>[19]</sup> on [Darwin machines](#) makes the link between universal

Darwinism and Campbell's evolutionary epistemology. [Susan Blackmore](#), in her 1999 book [The Meme Machine](#), devotes a chapter titled 'Universal Darwinism' to a discussion of the applicability of the Darwinian process to a wide range of scientific subject matters.

The philosopher of mind [Daniel Dennett](#), in his 1995 book [Darwin's Dangerous Idea](#), developed the idea of a Darwinian process, involving variation, selection and retention, as a generic algorithm that is substrate-neutral and could be applied to many fields of knowledge outside of biology. He described the idea of natural selection as a "universal acid" that cannot be contained in any vessel, as it seeps through the walls and spreads ever further, touching and transforming ever more domains. He notes in particular the field of [memetics](#) in the social sciences.

In agreement with Dennett's prediction, over the past decades the Darwinian perspective has spread ever more widely, in particular across the [social sciences](#) as the foundation for numerous schools of study including [memetics](#), [evolutionary economics](#), [evolutionary psychology](#), [evolutionary anthropology](#), [neural Darwinism](#), and [evolutionary linguistics](#).<sup>[21]</sup> Researchers have postulated Darwinian processes as operating at the foundations of physics, cosmology and chemistry via the theories of [quantum Darwinism](#),<sup>[22]</sup> [observation selection effects](#) and [cosmological natural selection](#).<sup>[23][24]</sup> Similar mechanisms are extensively applied in [computer science](#) in the domains of [genetic algorithms](#) and [evolutionary computation](#), which develop solutions to complex problems via a process of variation and selection.

Author D. B. Kelley has formulated one of the most all-encompassing approaches to universal Darwinism. In his 2013 book *The Origin of Phenomena*, he holds that [natural selection](#) involves not the preservation of favored races in the struggle for life, as shown by [Darwin](#), but the preservation of favored systems in contention for existence. The fundamental mechanism behind all such stability and evolution is therefore what Kelley calls "[survival of the fittest](#) systems."<sup>[25]</sup> Because all systems are cyclical, the Darwinian processes of [iteration](#), variation and [selection](#) are operative not only among species but among all natural phenomena both large-scale and small. Kelley thus maintains that, since the [Big Bang](#) especially, the [universe](#) has evolved from a highly chaotic state to one that is now highly ordered with many stable phenomena, naturally selected.

### **Examples of universal Darwinist theories**

The following approaches can all be seen as exemplifying a generalization of Darwinian ideas outside of their original domain of biology. These "Darwinian extensions" can be grouped in two categories, depending on whether they discuss implications of biological (genetic) evolution in other

disciplines (e.g. medicine or psychology), or discuss processes of variation and selection of entities other than genes (e.g. computer programs, firms or ideas). However, there is no strict separation possible, since most of these approaches (e.g. in sociology, psychology and linguistics) consider both genetic and non-genetic (e.g. cultural) aspects of evolution, as well as the interactions between them (see e.g. [gene-culture coevolution](#)).

### **Gene-based Darwinian extensions**

- [Evolutionary psychology](#) assumes that our emotions, preferences and cognitive mechanisms are the product of natural selection
- [Evolutionary educational psychology](#) applies evolutionary psychology to education
- [Evolutionary developmental psychology](#) applies evolutionary psychology to cognitive development
- [Darwinian Happiness](#) applies evolutionary psychology to understand the optimal conditions for human well-being
- [Darwinian literary studies](#) tries to understand the characters and plots of narrative on the basis of evolutionary psychology
- [Evolutionary aesthetics](#) applies evolutionary psychology to explain our sense of beauty, especially for landscapes and human bodies
- [Evolutionary musicology](#) applies evolutionary aesthetics to music
- [Evolutionary anthropology](#) studies the evolution of human beings
- [Sociobiology](#) proposes that social systems in animals and humans are the product of Darwinian biological evolution
- [Human behavioral ecology](#) investigates how human behavior has become adapted to its environment via variation and selection
- [Evolutionary medicine](#) investigates the origin of diseases by looking at the evolution both of the human body and of its parasites
- [Paleolithic diet](#) proposes that the most healthy nutrition is the one to which our hunter-gatherer ancestors have adapted over millions of years
- [Paleolithic lifestyle](#) generalizes the paleolithic diet to include exercise, behavior and exposure to the environment
- [Molecular evolution](#) studies evolution at the level of DNA, RNA and proteins
- [Biosocial criminology](#) studies crime using several different approaches that include genetics and evolutionary psychology
- [Evolutionary linguistics](#) studies the evolution of language, biologically as well as culturally<sup>[26]</sup>

### **Other Darwinian extensions**

- [Quantum Darwinism](#) sees the emergence of classical states in physics as a natural selection of the most stable quantum properties
- [Cosmological natural selection](#) hypothesizes that universes reproduce and are selected for having fundamental constants that maximize "fitness"



- [Complex adaptive systems](#) models the dynamics of complex systems in part on the basis of the variation and selection of its components
- [Evolutionary archaeology](#) is a Darwinian approach to the cultural evolution of tools
- [Evolutionary computation](#) is a Darwinian approach to the generation of adapted computer programs
- [Genetic algorithms](#), a subset of evolutionary computation, models variation by "genetic" operators (mutation and recombination)
- [Evolutionary robotics](#) applies Darwinian algorithms to the design of autonomous robots
- [Artificial life](#) uses Darwinian algorithms to let organism-like computer agents evolve in a software simulation
- [Evolutionary art](#) uses variation and selection to produce works of art
- [Evolutionary music](#) does the same for works of music
- [Clonal selection theory](#) sees the creation of adapted antibodies in the immune system as a process of variation and selection
- [Neural Darwinism](#) proposes that neurons and their synapses are selectively pruned during brain development
- [Evolutionary epistemology](#) of theories assumes that scientific theories develop through variation and selection
- [Memetics](#) is a theory of the variation, transmission, and selection of cultural items, such as ideas, fashions, and traditions
- [Dual inheritance theory](#) a framework for cultural evolution developed largely independently of [memetics](#)
- [Cultural selection theory](#) is a theory of cultural evolution related to [memetics](#)
- [Cultural materialism](#) is an anthropological approach that contends that the physics
- [Environmental determinism](#) is a social science theory that proposes that it is the environment that ultimately determines human culture.
- [Evolutionary economics](#) studies the variation and selection of economic phenomena, such as commodities, technologies, institutions and organizations.
- [Evolutionary ethics](#) investigates the origin of morality, and uses Darwinian foundations to formulate ethical values
- [Big History](#) is the science-based narrative integrating the history of the universe, earth, life, and humanity. Scholars consider Universal Darwinism to be a possible unifying theme for the discipline.

## **Books**

- Campbell, John. [\*Universal Darwinism: the path of knowledge\*](#).
- Cziko, Gary. [\*Without Miracles: Universal Selection Theory and the Second Darwinian Revolution\*](#).

- Hodgson, Geoffrey Martin; Knudsen, Thorbjorn. [Darwin's Conjecture: The Search for General Principles of Social and Economic Evolution.](#)
- Kelley, D. B. [The Origin of Everything via Universal Selection, or the Preservation of Favored Systems in Contention for Existence.](#)
- Plotkin, Henry. [Evolutionary Worlds without End.](#)
- Plotkin, Henry. [Darwin Machines and the Nature of Knowledge.](#)
- [Dennett, Daniel.](#) [Darwin's Dangerous Idea.](#)

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## Charles Darwin Foundation

<https://www.darwinfoundation.org/en/>



The Charles Darwin Foundation and its Research Station are the largest and oldest science and conservation organization in Galapagos, generating groundbreaking discoveries and effective conservation focused on protecting the unique biodiversity of the Galapagos Islands.

Recognizing the need to protect the fragile ecosystem of Galapagos, the Charles Darwin Foundation (CDF) was established in 1959 by a group of passionate scientists, researchers and conservationists as an international non-profit organization.

Created alongside the Galapagos National Park Directorate (GNPD), CDF was founded under the auspices of UNESCO and IUCN to provide the highest quality scientific research, technical advice, and practical expertise on conserving and protecting the archipelago.

We have since acted as the GNPD's primary partner and the source of key research and capacity-building to direct the Park's conservation efforts for the sustainable development of Galapagos and its local community.

The Charles Darwin Foundation carries out its mission with the endorsement of an Agreement with the Ecuadorian State since 1964 that was renewed on July 29, 2016 for an additional 25 years. The new agreement ratifies the importance of the unique alliance between the Ecuadorian Government and the Charles Darwin Foundation for the conservation of the Galapagos Islands.

### OUR VISION

Our vision is to champion the Galapagos Islands as a global model for conservation, inspiring sustainable practices and the next generations to protect our planet's natural wonders.

### OUR MISSION

The mission of the Charles Darwin Foundation and its Research Station is to tackle the greatest threats and challenges to Galapagos through scientific research and conservation action, in order to safeguard one of the world's most important natural treasures.

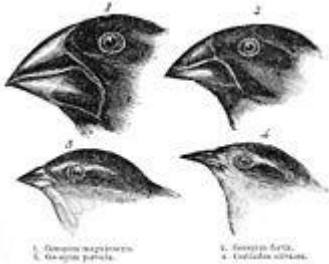


# Social effects of evolutionary theory

[https://en.wikipedia.org/wiki/Social\\_effects\\_of\\_evolutionary\\_theory](https://en.wikipedia.org/wiki/Social_effects_of_evolutionary_theory)

Part of a series on

**Evolutionary biology**



Darwin's finches by John Gould

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- [Evidence](#)
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show

**Processes and outcomes**

show

**Natural history**

show

**History of evolutionary theory**

show

**Fields and applications**

show

**Social implications**

The **social effects of evolutionary thought** have been considerable. As the scientific explanation of life's diversity has developed, it has often displaced alternative, sometimes very widely held, explanations. Because the theory of [evolution](#) includes an explanation of humanity's origins, it has had a profound impact on human [societies](#). Some have vigorously denied acceptance of the scientific explanation due to its perceived religious implications (e.g. its implied rejection of the [special creation](#) of humans presumably described in the [Bible](#)). This has led to a vigorous conflict between [creation and evolution in public education](#), primarily in the United States.

## **Evolution and ethics**

The theory of evolution by natural selection has also been adopted as a foundation for various ethical and social systems, such as [social Darwinism](#), an idea that preceded the publication of *The Origin of Species*, popular in the 19th century, which holds that "the [survival of the fittest](#)" (a phrase coined in 1851 by Herbert Spencer,<sup>[1]</sup> 8 years before Darwin published his theory of evolution) explains and justifies differences in wealth and success among societies and people. A similar interpretation was one



created by Darwin's cousin, [Francis Galton](#), known as [eugenics](#), which claimed that human civilization was subverting natural selection by allowing the less bright and less healthy to survive and out-breed the smarter and more healthy.

Later advocates of this theory suggested radical and often coercive social measures in an attempt to "correct" this imbalance. [Thomas Huxley](#) spent much time demonstrating through a series of thought experiments that it would not only be immoral, but impossible.<sup>[2]</sup> [Stephen Jay Gould](#) and others have argued that social Darwinism is based on misconceptions of evolutionary theory, and many ethicists regard it as a case of the [is-ought problem](#). After the atrocities of [the Holocaust](#) became linked with eugenics, it greatly fell out of favor with public and scientific opinion, though it was never universally accepted by either, and at no point in Nazi literature is Charles Darwin or the scientific theory of evolution mentioned.

In his book [The End of Faith](#), [Sam Harris](#) argues that Nazism was largely a continuation of [Christian anti-Semitism](#). Jim Walker compiled a list of 129 quotes from [Mein Kampf](#) in which Hitler described himself as a Christian, or mentioned God, Jesus or a biblical passage. Some argue that six million of the people killed during the Holocaust were killed because of their religion (Judaism) not their race, "strength," or any reason with an obvious link to the mechanism of Darwinian evolution. Hitler often used Christian beliefs like, "Jews killed Jesus," to justify his anti-Semitism.

The notion that humans share ancestors with other animals has also affected how some people view the relationship between humans and other species. Many proponents of [animal rights](#) hold that if animals and humans are of the same nature, then rights cannot be distinct to humans.

Charles Darwin, in fact, considered "[sympathy](#)" to be one of the most important [moral virtues](#) — and that it was, indeed, a product of natural selection and a trait beneficial to social animals (including [humans](#)). Darwin further argued that the most "sympathetic" societies would consequently be the most "successful." He also stated that our sympathy should be extended to "all sentient beings":

As man advances in civilization, and small tribes are united into larger communities, the simplest reason would tell each individual that he ought to extend his social instincts and sympathies to all the members of the same nation, though personally unknown to him. This point being once reached, there is only an artificial barrier to prevent his sympathies extending to the men of all nations and races. If, indeed, such men are separated from him by great differences in appearance or habits, experience unfortunately shows us how long it is, before we look at them as our fellow-creatures. ... This virtue, one of the noblest with which man is endowed, seems to arise incidentally from our sympathies becoming more tender and more widely diffused, until they are extended to all sentient beings. As soon as this virtue is honored and practiced by some few men, it spreads through instruction and example to the young, and eventually becomes incorporated in public opinion.

— *Charles Darwin; The Descent of Man, 1871*

## **Evolution and religion**

Before Darwin's argument and presentation of the evidence for evolution, Western [religions](#) generally discounted or condemned any claims that diversity of life is the result of an evolutionary process, as did most scientists in the English scientific establishment. However, evolution was accepted by some religious groups such as

the [Unitarian](#) church and the liberal [Anglican](#) theologians who went on to publish *Essays and Reviews*, as well as by many scientists in [France](#) and [Scotland](#) and some in [England](#), notably [Robert Edmund Grant](#). Literal or authoritative interpretations of [Scripture](#) hold that a [supreme being](#) directly created humans and other animals as separate [Created kinds](#), which to some means species. This view is commonly referred to as [creationism](#). From the 1920s to the present in the US, there has been a strong religious backlash to the teaching of evolution theory, particularly by conservative [evangelicals](#). They have expressed concerns about the effects of the teaching of evolution on society and their faith (see [Creation–evolution controversy](#)).

In response to the wide scientific acceptance of the theory of evolution, many religions have formally or informally synthesized the scientific and religious viewpoints. Several important 20th century scientists ([Fisher](#), [Dobzhansky](#)) whose work confirmed Darwin's theory, were also [Christians](#) who saw no incompatibility between their experimental and theoretical confirmations of evolution and their faith. Some religions have adopted a [theistic evolution](#) viewpoint, where God provides a [divine spark](#) that ignited the process of evolution and (or) where God has guided evolution in one way or another.

## **[Evolution and the Roman Catholic Church](#)**

The [Roman Catholic Church](#), beginning in 1950 with [Pope Pius XII](#)'s encyclical [Humani Generis](#), took up a neutral position with regard to evolution. "The Church does not forbid that...research and discussions, on the part of men experienced in both fields, take place with regard to the doctrine of evolution, in as far as it inquires into the origin of the human body as coming from pre-existent and living matter."

In an October 22, 1996, address to the [Pontifical Academy of Science](#), [Pope John Paul II](#) updated the Church's position, recognizing that Evolution is "more than a hypothesis" - "In his encyclical *Humani Generis*, my predecessor Pius XII has already affirmed that there is no conflict between evolution and the doctrine of the faith regarding man and his vocation... Today, more than a half-century after the appearance of that encyclical, some new findings lead us toward the recognition of evolution as more than a hypothesis. In fact, it is remarkable that this theory has had progressively greater influence on the spirit of researchers, following a series of discoveries in different scholarly disciplines."

## **[Islamic views on evolution](#)**

[Islamic views on evolution](#) are diverse, ranging from [theistic evolution](#) to [Old Earth creationism](#). Some Muslims around the world believe "humans and other living things have evolved over time", yet some others believe they have "always existed in present form". Some Muslims believe that the processes of life on Earth started from one single point of species with a mixture of water and a viscous clay-like substance. Muslim thinkers have proposed and accepted elements of the theory of evolution, some holding the belief of the supremacy of [God](#) in the process. Some scholars suggested that both narratives of creation and of evolution, as understood by modern science, may be believed by modern Muslims as addressing two different kinds of truth, the [revealed](#) and the empirical. Others argue that faith and science can be integrated and complement each other.

## **[Jewish views on evolution](#)**

[Jewish views on evolution](#) includes a continuum of views about the [theory of evolution](#), [experimental evolution](#), the [origin of life](#), the [age of the universe](#), and [theistic evolution](#). Today, many Jewish people accept the theory of evolution and do not see it as incompatible with traditional Judaism, reflecting the emphasis of

prominent [rabbis](#) such as the [Vilna Gaon](#)<sup>[17]</sup> and [Maimonides](#)<sup>[18]</sup> on the ethical rather than factual significance of scripture.

## **Evolutionary theory and the political left**

[\[edit\]](#)



**A caricature of Darwin from [Vanity Fair](#) in 1871**

In 1861 Karl Marx wrote to his friend Ferdinand Lassalle, "Darwin's work is most important and suits my purpose in that it provides a basis in natural science for the historical class struggle. ... Despite all shortcomings, it is here that, for the first time, 'teleology' in natural science is not only dealt a mortal blow but its rational meaning is empirically explained."

Most later Marxists agreed with this view, but some – particularly those in the early [Soviet Union](#) – believed that evolutionary theory conflicted with their economic and social ideals. As a result, they came to support [Lamarckism](#) instead – the idea that an organism can pass on characteristics that it acquired during its lifetime to its offspring. This led to the practice of [Lysenkoism](#), which caused agricultural problems.

In his book, [Mutual Aid: A Factor of Evolution](#), [anarcho-communist Peter Kropotkin](#) argued that co-operation and mutual aid are as important in the evolution of the species as competition and mutual strife, if not more so.

On the contemporary moderate left, some authors such as [Peter Singer](#) (in his book, [A Darwinian Left](#)) support Darwinism but reach different political and economic lessons than more conservative observers. Richard Dawkins' book, [The Selfish Gene](#), has a chapter, "Nice guys finish first," that attempts to explain the role of altruism and cooperation in evolution and how social animals not only cannot survive without such traits, but how evolution will create them. Dawkins explains that when an animal sacrifices itself or uses its resources for the survival of other members of the same species, its genes, present in the other animals, survive. For example, if a mother dies to save three of its pups, one and a half copies (on average) of its genes will survive, because there is a 50% chance of a particular gene being present in its offspring. Dawkins also made a documentary of the same name. According to the documentary, Dawkins added that chapter as a way of overcoming modern day misinterpretations of the concept of *survival of the fittest*. Left-wing transhumanists see technology as a means to overcome inequalities that stem from biology. New left feminist [Shulamith Firestone](#) saw technological control over reproduction as essential for gender

equality.<sup>[[citation needed](#)]</sup> More recently the Laboria Cuboniks collective has articulated an antinaturalist politics that seeks to overcome essentialist categories through technological empowerment.

## **Evolution in relation to Social Darwinism and Imperialism**

"[Social Darwinism](#)" is a derogatory term associated with the 19th century [Malthusian](#) theory developed by [Whig](#) philosopher [Herbert Spencer](#). It is associated with evolutionary theory but now widely regarded as unwarranted. Social Darwinism was later expanded by others into ideas about "[survival of the fittest](#)" in commerce and human societies as a whole, and led to claims that [social inequality](#), [sexism](#), [racism](#) and [imperialism](#) were justified. However, these ideas contradict [Darwin](#)'s own views, and contemporary scientists and philosophers consider these ideas to be neither mandated by evolutionary theory nor supported by data.

Social Darwinism is further linked with [nationalism](#) and imperialism During the age of [New Imperialism](#), the concepts of evolution justified the exploitation of "lesser breeds without the law" by "superior races." To elitists, strong nations were composed of white people who were successful at expanding their empires, and as such, these strong nations would survive in the struggle for dominance. With this attitude, Europeans, except for Christian missionaries, seldom adopted the customs and languages of local people under their empires. [Christian missionaries](#), on the other hand, were the very first individuals to meet new peoples and develop writing systems for local inhabitants' languages that lacked one. Being critics of Social Darwinism, they ardently [opposed slavery](#) and provided an education and religious instruction to the new peoples they interacted with since they felt that this was their duty as [Christians](#).



ISBN 978-81-982847-9-2

